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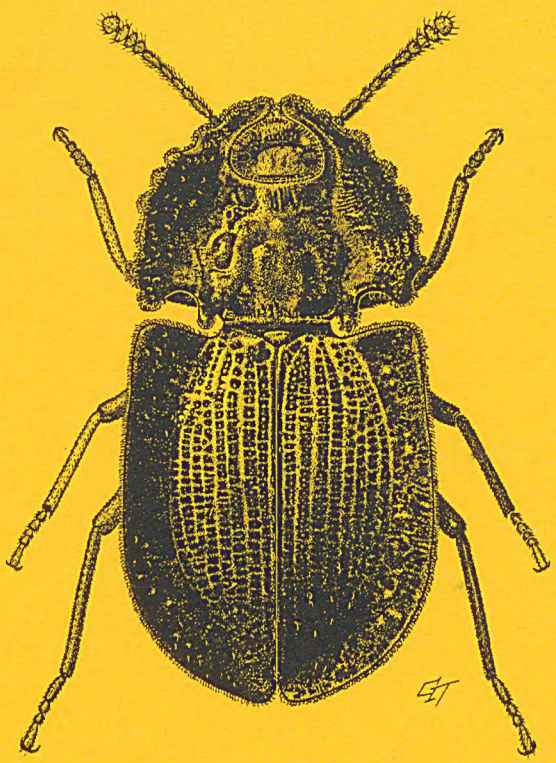

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Cover: The New Caledonian *Aoupinia pseudohelea* Matthews (Coleoptera: Tenebrionidae) bears a striking resemblance to Australia's pie-dish beetles of the genus *Helea*. However it belongs to the unrelated Gondwanan tribe Adeliini. This species is known only from the Aoupinie Special Fauna Reserve that straddles New Caledonia's central mountain massif between Poya and Ponerihouen. It is a cryptic species living within rainforest leaf litter. Illustration by Geoff Thompson.

EUPLOEA ALCATHOE MISENUS MISKIN (LEPIDOPTERA: NYMPHALIDAE) IN TORRES STRAIT, QUEENSLAND

TREVOR A. LAMBKIN

Queensland Department of Primary Industries and Fisheries, 665 Fairfield Road, Yeerongpilly, Qld 4105 (Email: Trevor.Lambkin@dpi.qld.gov.au)

Abstract

Euploea alcathoe misenus Miskin, 1890, stat. rev. is shown to be the appropriate subspecific name for *E. alcathoe* (Godart) populations in Torres Strait, Queensland. The type locality of Thursday Island for *E. a. monilifera* (Moore, 1883) is shown to be erroneous and this taxon should be treated as a junior synonym of either *E. a. nox* Butler, 1866, from Aru Island, Indonesia, or *E. a occulta* Butler, 1877, from the Port Moresby region of Papua New Guinea.

Introduction

Euploea alcathoe (Godart) has an extensive distribution, ranging from the Moluccas (Obi Island to Aru), through Numfoor and Japen, east to New Guinea and its outlying islands (where it is widespread) and southwards to northern Australia (Braby 2000, Parsons 1998). Its external facies are highly variable and, as a result, this has led to around 30 names of 'races' or subspecies being applied to this species (Parsons 1998); however, several distinct subspecies are recognisd (M. De Baar pers. comm.).

E. alcathoe was described in 1819 from a series of specimens from Ambon, in the southern Moluccas, Indonesia (Edwards *et al.* 2001). Subsequently, a number of subspecies or forms were described from closer to Australia, many from Papua New Guinea (Ackery and Vane-Wright 1984, Parsons 1998). Almost all of these have been appropriately assigned to *E. alcathoe* (Ackery and Vane-Wright 1984), but disagreement still occurs over the correct placement of the endemic Australian taxon *E. a. eichhorni* Staudinger (Ackery and Vane-Wright 1984, Braby 2000), with many Australian workers still regarding it as a separate species (Lambkin 2001).

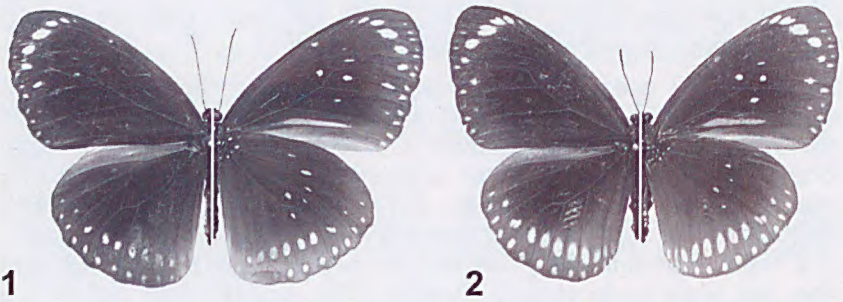
Parsons (1998) amended the taxonomic positions of the various 'races' occurring in Papua New Guinea and determined that, on the mainland, only two 'races' of *E. alcathoe* occurred: *E. a. coffea* Fruhstorfer, 1910 (Type locality: Madang), found on the northern mainland and some offshore islands, and *E. a. occulta* Butler, 1877 (Type locality: Port Moresby), occurring on the southern and eastern mainland and Daru Island. In general, *E. a. coffea* is predominately dark without spotting, while *E. a. occulta* most often has minor white spotting (Parsons 1998), but frequently occurs as a boldly white-spotted form (form *samaraina* Carpenter) in southern Papua New Guinea (Parsons 1998). Similar boldly spotted forms are also known from Aru (*E. a. nox* Butler, 1866) and the Kai Islands (*E. a. nymphas* Fruhstorfer, 1910) (Fenner 1991).

Considering the doubt that still surrounds the taxonomic placement of the distinctive *E. a. eichhorni*, two other recognisably distinct subspecies of *E.*

alcathoe occur in Australia. *E. a. enastri* Fenner is found in northeastern Arnhem Land, Northern Territory and was described from a type series of 24 males and 5 females (Fenner 1991), while *E. a. monilifera* (Moore) [originally *Gamatoba monilifera*] was described from a single female purportedly collected on Thursday Island, Torres Strait, Queensland (Moore 1883) and housed in The Natural History Museum, London. Until the mid 1980s, *E. a. monilifera* was known only from the female type and a single male from Cape York in the Queensland Museum, Brisbane, which had been described as *E. misenus* Miskin (Miskin 1890, Hancock 1995). Both specimens were illustrated by Waterhouse and Lyell (1914).

Since the mid 1980s, many specimens of supposed *E. a. monilifera* have been collected from Torres Strait, almost all from the more northern islands (Lambkin 2001). An examination of the more recently collected females has indicated that none of them resembles the type specimen, which casts doubt on the reliability of the type's label data. Furthermore, the type appears to be closest to *E. a. nox* (Fig. 1) from Aru and form *samaraina* of *E. a. occulta* (Fig. 2), which occurs on the Papua New Guinea mainland, particularly around Port Moresby and Wau (M. De Baar pers. comm.), both areas not a great distance from Torres Strait.

In this paper, the results of the examination of these recently collected specimens are provided, the history of collecting in the region prior to 1883 is discussed, evidence is presented that the type of *E. a. monilifera* was not collected in Torres Strait but most likely originated from eastern Papua New Guinea or Aru, and its nomenclature is consequently revised.



Figs 1-2. *Euploea alcathoe* subspp.; upperside left, underside right; all figures to scale. (1) *E. a. nox*, female, Dobo, Aru, August 1996 [forewing length 45 mm]; (2) *E. a. occulta*, female, Wau, 1500 m, Morobe Province, PNG, 8.x.1987, JG [44 mm].

Abbreviations of specimen depositories are: BMNH – The Natural History Museum, London; CEMC – C.E. Meyer collection, Canberra; MDBC – M. De Baar collection, Brisbane; SSBC – S.S. Brown collection, Bowral; TLIKC – joint collection of T.A. Lambkin and A.I. Knight, Brisbane. Abbreviations of collectors are: AIK – A.I. Knight; CEM – C.E. Meyer; JG – J. Guyomar; SSB – S.S. Brown; TAL – T.A. Lambkin.

Material examined

Euploea alcathoe monilifera

Holotype ♀ (in BMNH), with 5 labels: (1) 'Thursday I^{s}. Pur. From E. Gerrard. 80–83.'; (2) 'B.M. TYPE No. Rh. 6569 *Gamatoba monilifera* ♀ Moore'; (3) '*Gamatoba monilifera* ♀ Type Moore'; (4) 'Type'; (5) Thursday Isl. 80–83 ♀'.

Euploea alcathoe misenus

QUEENSLAND (TORRES STRAIT): 6 ♀♀, Saibai Island, 11-12.iv.1992, 21.ii.1994, 23.iii.1994, 23.iv.1995, 1.iii.1996, 14.iii.2001, TAL (TLIKC); 28 ♀♀, same data except 11-12.iv.1992, 18.iv.2000, 20.iv.2000 (3), 21.iv.2000 (2), 29.iv.2000, 8.v.2000 (3), 21.v.2000, 5.iv.2001, 7.iv.2001 (3), 3.v.2001 (3), 5.v.2001, 7.v.2001, 8.v.2001 (3), 19.v.2001 (2), 13.ii.2004, 15.ii.2004, AIK (TLIKC); 2 ♀♀, same data except 19-20.iv.2001, 3.v.2002, CEM (CEMC); 1 ♀, same data except 22.ii.1994, TAL (MDBC); 10 ♀♀, Dauan Island, 10.iv.1992, 18.iv.1992, 17.ii.2004, 18.ii.2004 (2), 19.ii.2004, 20.ii.2004 (2), 21.ii.2004, 23.ii.2004, TAL (TLIKC); 7 ♀♀, same data except 27.iv.2000, 24.iv.2001, 10.v.2001, 13.v.2001, 25.iv.2001, 14.i.2004, 18.i.2004, AIK (TLIKC); 10 ♀♀, same data except 11-17.iv.2001 (5), 28.iv-2.v.2002 (5), CEM (CEMC); 8 ♀♀, same data except 15-16.iv.2001 (4), 25.iv-2.v.2002 (4), SSB (SSBC); 4 ♀♀, Boigu Island, 21.iii.1994, 10.iii.2001 (2), egg coll. 10.iii.2001, TAL (TLIKC); 1 ♀, Darnley Island, 16.i.1994, AIK (TLIKC).

Euploea alcathoe occulta

PAPUA NEW GUINEA: 2 ♀♀, Wau, 1500 m, Morobe Province, 8.x.1987, JG (MDBC).

Euploea alcathoe nox

INDONESIA (ARU): 1 ♀, Dobo, Aru Is., August 1996 (MDBC).

Discussion

In general, 'true' *E. alcathoe* is a relatively large species, with many of the forms having a predominately dark brown to black ground colour without extensive areas of white spotting (except in *E. a. eichhorni*) (Ackery and Vane-Wright 1984, Parsons 1998). Males of *E. alcathoe* can be distinguished from other similar *Euploea* Fabricius species by the bowed dorsum of the forewing, presence of a matt-black speculum on the hindwing upperside and the absence of a forewing sex brand. Females of *E. alcathoe* have broad wings with a predominately dark brown ground colour, often with a pale or whitened hindwing tornus, and a characteristic pale broad streak on the forewing underside below vein CuA_2. *E. alcathoe* is common locally and frequents marginal vegetation such as vine thickets and mangroves (Fenner 1991, Lambkin 2001) and secondary forest (Parsons 1998). It is a strong flyer

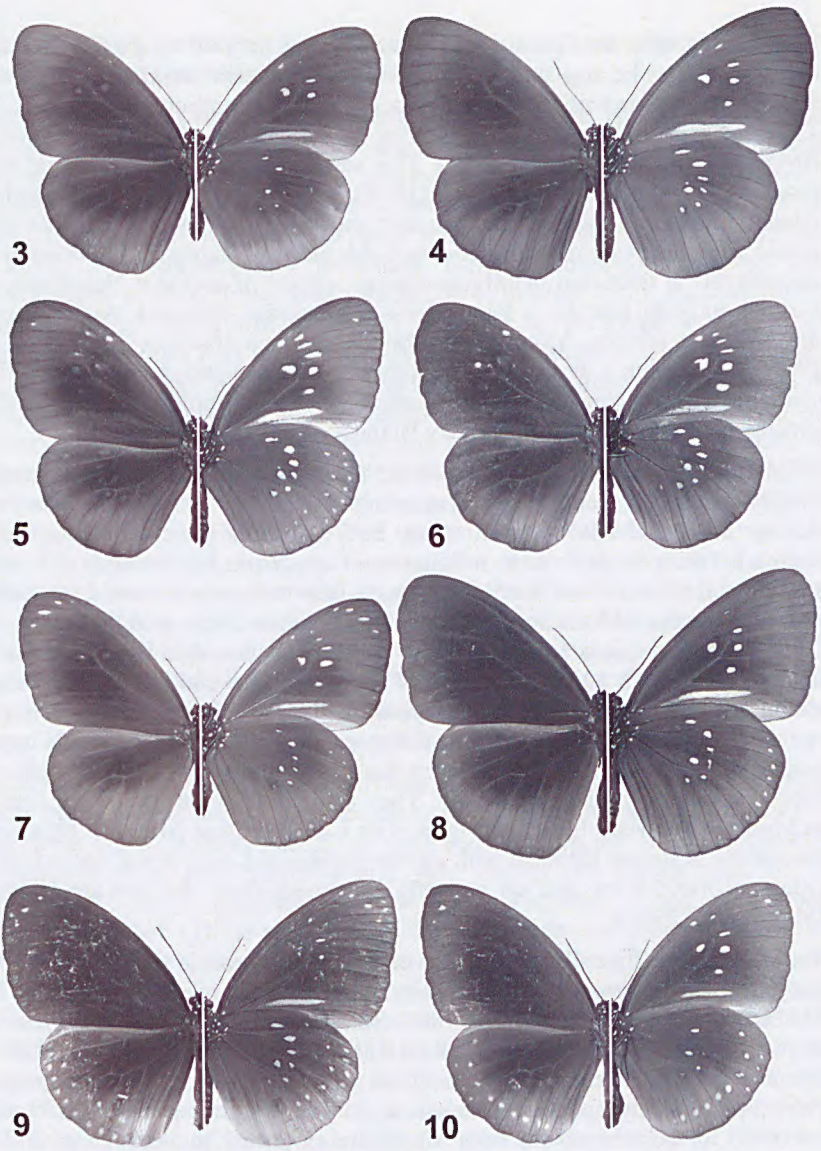
and frequently visits blossom (Lambkin 2001, Parsons 1998). Larvae are known to feed on *Gymnanthera oblonga* (Asclepiadaceae) (Lambkin 2001).

The type specimen of *E. a. monilifera*, which resembles well spotted forms of *E. a. nox* (Fig. 1) and *E. a. occulta* (Fig. 2), is characterised by possessing relatively large white spots in the forewing upperside subapical area (curving outward from the costa) and the hindwing upperside submarginal area, with smaller, distinct hindwing marginal white spots (Moore 1883, Waterhouse and Lyell 1914). Examination of a series of 77 females (listed above) from Torres Strait (Figs 3-10) indicates that none of these recently collected specimens resembles the type. Moreover, they can be roughly placed into four morphological groups, ranging from predominately dark specimens with no upperside spotting through to specimens with some fore and hindwing spotting on the upperside, but still no specimens with as much upperside spotting or as strongly spotted as the type.

These morphological groups are (upperside markings): (1) with no white spotting [29 of 77 specimens] (Figs 3-4); (2) with 0-3 subcostal and/or postmedial small white spots on forewing, 0-2 small white subapical streaks or spots on forewing, no hindwing white spotting [16 of 77 specimens] (Figs 5-6); (3) with 0-3 subcostal and/or postmedial small white spots on forewing, 0-4 sub apical spots on forewing, faint marginal and submarginal white dots or spots on hindwing [26 of 77 specimens] (Figs 7-8); (4) with 3-4 subapical spots on forewing, small marginal and larger submarginal white spots on hindwing [6 of 77 specimens] (Figs 9-10).

In general, females of *E. alcathoe* from Torres Strait are more spotted than males. Now that a larger number of specimens of both sexes is known from Torres Strait, the population is found to be more variable than was previously thought (Fenner 1991). Despite this, they are still not as variable as their Papua New Guimea counterparts, which are known to vary considerably, even from the same locality (Parsons 1998). Examination of Torres Strait females has shown that only a small proportion of them (6 of 77) have significant white spotting, but still lack the relatively large white spots on the forewing subapical and hindwing subterminal areas, which are characteristic of the *E. a. monilifera* type specimen.

An examination of the female holotype (K. Goodger pers. comm.) indicates that the specimen is labelled 'Thursday Isl' and was purchased by the BMNH from 'E. [Edward] Gerrard'. Edward Gerrard was a natural history agent and taxidermist and the BMNH acquired bird skins through his agency from collectors in northern Queensland, including Cape York (Whittell 1954, Morris 2004). The type was registered in the museum collection in 1880 (K. Goodger pers. comm.) [being part of the 83rd collection acquired that year] and subsequently described by Moore (1883). The date of capture and the collector are unknown but, since the specimen was registered in 1880, collection of the specimen must have occurred no later than that.



Figs 3-10. *Euploea alcathoe misenus* females; upperside left, underside right; all figures to scale. (3) Saibai Island, Torres Strait, 21.iv.2000, AIK, [forewing length 42 mm]; (4) Saibai, 19.v.2001, AIK, [46 mm]; (5) Saibai, 8.v.2001, AIK [43 mm]; (6) Saibai, 5.v.2001, AIK [42 mm]; (7) Saibai, 21.iv.2000, AIK [42 mm]; (8) Dauan Island, 24.iv.2001, AIK [48 mm]; (9) Darnley Island, 16.i.1994, AIK [45 mm]; (10) Dauan, 14.i.2004, AIK [43 mm].

The locality data for Gerrard's acquisitions that he sold to the BMNH are questionable, as he also sold a specimen of *E. treitschkei viridis* Butler to the BMNH (designated as the female type) and it too purportedly came from Thursday Island (Label data: 'Thursday Is, Purch. from E. Gerrard. 80–83. BMNH Rh. 6738') (Parsons 1998). This same specimen was illustrated and discussed by Waterhouse and Lyell (1914), who concluded that the Thursday Island collection locality was erroneous and it was 'almost certain that this island was the place of export but not the place of capture'. *E. treitschkei* (Boisduval) is restricted mainly to coastal regions of northern New Guinea, various outlying islands in Papua New Guinea, the Bismarck Archipelago, the Solomon Islands, Vanuatu and New Caledonia (Parsons 1998, M. De Baar pers. comm.) and, since no other specimens are known from the southern coast of New Guinea and Torres Strait, it is unlikely that Gerrard's specimen was collected on Thursday Island.

What further challenges the veracity of the locality labels of some natural history specimens from this era (including Moore's *G. a. monilifera*) is that during the period 1867 to 1880 many bird collectors travelled through the southern Torres Strait en route to Aru from Cape York. For example, J.T. and J.F. Cockerell were two such collectors whose collections were eventually passed on to the BMNH and, since then, it has been discovered that many of Cockerell's specimens labelled 'Cape York' are believed to have originated from Aru (Whittell 1954, Monteith 1987). Waterhouse and Lyell (1914) also examined both Moore's (*G. monilifera*) and Miskin's (*E. misenus*) type specimens. They commented that there was no doubt that Miskin's type originated from Australia and inferred that they had doubts over the origin of Moore's Thursday Island specimen. They also commented on the similarity of Moore's Thursday Island specimen with *E. a. nox* from Aru: 'the figure of the female is almost identical with an Aru female of *E. nox* in our collection'. Other incorrect label data on butterfly specimens from this era are known (Meyer *et al.* 2004).

The major butterfly collections made in the Torres Strait in the late 19th and early 20th centuries, after Moore described his type, were by Gervase F. Mathew on Thursday Island in 1885 (Mathew 1885, Parsons 1998), and Hermann Elgner (Moulds 1977) throughout Torres Strait during the first decade of the last century, some 20-30 years after Moore's description. Published butterfly collection records from Torres Strait prior to 1880 are restricted to those noted by John MacGillivray during the voyage of HMS Rattlesnake during the years 1846-1850 (Moulds 1977). HMS Rattlesnake made only four stops in Torres Strait during 1849 (Mt Ernest, Arden, Darnley Islands and Bramble Cay), with no mention of Thursday Island (Moulds 1977, Monteith 1987). W.Y. Turner in about 1875 (Butler 1876a, Parsons 1998) and Andrew Goldie from the Australian Museum in 1877 and 1879 (Parsons 1998) collected butterflies at Port Moresby in Papua New Guinea.

Natural history specimens, including butterflies, were also collected at Aru in the mid 1860s (Butler 1866, Monteith 1987).

Port Moresby and Aru are the closest locations to the Torres Strait islands where collections of *Euploea* were made around that time and where spotted forms of *E. a. occulta* (form *samaraina*) and *E. a. nox* respectively commonly occur (Parsons 1998). Arthur G. Butler described *E. nox* [*E. a. nox*] from Aru in 1866. Turner later sent his specimens to Butler in the BMNH, who subsequently published Turner's collection records, plus descriptions of several new taxa (Butler 1876a, 1876b, 1877, Parsons 1998). Among these, Butler (1876b, 1877) recorded or described a number of *Euploea* taxa from Port Moresby, including the description of *E. occulta* [*E. a. occulta*] (Butler 1877). Goldie's specimens were eventually passed on to and deposited in the collection of Frederick D. Godman and Osbert Salvin via Henry Grose-Smith (Parsons 1998) and Moore (1883) later used some of these specimens in his monograph. Moore was also based at the BMNH around the same time as Butler and was revising *Euploea*. He placed Butler's *E. occulta* into his newly erected genus *Gamatoba* Moore, as well as describing two further species, *G. monilifera* from Thursday Island and *G. diadema* Moore [a synonym of *E. a. occulta*] from Port Moresby [at that time in the collection of Grose-Smith (Moore 1883)]. Therefore, during the two decades that Butler and Moore were describing new *Euploea* taxa, much confusion occurred with regard to the many different forms and species available to them from the Indo-Australian region. This confusion might also have led to uncertainty with some locality labels on particular specimens.

At the time when Moore was describing or nominating the species within his new genus *Gamatoba*, all the specimens of boldly white-spotted forms of *E. alcathoe* (*E. a. occulta* and *E. a. nox*) that were in the BMNH primarily originated from Port Moresby and Aru, except the female type of *G. monilifera*, which purportedly came from Thursday Island. Therefore, considering that: (1) the similarity of the female type specimen to female *E. a. occulta* (form *samaraina*) and *E. nox*, especially from Port Moresby and Aru where all the known specimens of this species were known from at that time; (2) the first record of butterflies collected on Thursday Island (Mathew 1885) was five years after the BMNH acquired the type specimen; (3) no other female specimen resembling the type has since been collected in Torres Strait; (4) incorrect data labels on specimens from this period are possible, particularly those of Edward Gerrard; (5) Waterhouse and Lyell (1914) had previously expressed doubt concerning the female's label data and inferred Aru as a possible origin; and (6) the bulk and diversity of *Euploea* acquisitions from the Indo-Australian region that were deposited in the BMNH took place during the time Moore and Butler were based there, it is evident from the information and data presented here that Moore's female type most likely was not collected on Thursday Island, but might have originated from Port Moresby or Aru.

Acceptiing that Moore's holotype of *E. a. monilifera* was not from Australia, then *E. a. misenus* Miskin, 1890, stat. rev. is the name that should be used for specimens from Torres Strait and Cape York. Miskin's type matches, in external facies, a good proportion of *E. alcathoe* males currently known from Torres Strait. Accordingly, *E. a. misenus* is removed from synonymy with *E. a. monilifera*. Based on the evidence presented here, the taxon *E. a. monilifera* (Moore, 1883) should be treated as a junior synonym of either *E. a. nox* Butler, 1866, or *E. a occulta* Butler, 1877.

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K. Goodger (BMNH) and M. De Baar provided valuable personal communications; K. Goodger also provided valuable advice on the type of *E. a. monilifera*; C.E. Meyer, M. De Baar and S.S. Brown allowed examination of material held in their collections and J.S. Bartlett formatted and prepared the black and white plates. A.I. Knight, who collected many of the specimens used for this study, is recognised here for the major contribution he has made to the knowledge of Torres Strait butterflies.

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MISCELLANEOUS NOTES

The following notes on new or interesting butterfly distribution records are abstracted from the *News Bulletin of the Entomological Society of Queensland* and were first published during 2004 or 2005 in the volumes and parts indicated.

Nesolycaena albosericea (Miskin) [Lycaenidae] - Between 31 August and 15 September 2004, a suvey was undertaken to assess the distribution and vulnerability of this species in the Bundaberg area, SE Qld. *N. albosericea* and its host plant *Boronia rosmarinifolia* (Rutaceae) were found only on certain Podsols, including Coona, Kinkuna, Theodolite, Wallum and Woodgate soils, and the butterfly was common at several localities. It was not found on *Boronia falcifolia* growing in swampy heath. Fire was identified as a potential threat to *N. albosericea* communities. - The distribution of the Satin blue butterfly (*Nesolycaena albosericea*) in the Bundaberg area - Jane Wilson - **32**(7): 174-178 (2004).

Catopsilia scylla etesia (Hewitson) [Pieridae] - Generally regarded as rare south of Rockhampton, this migratory species was recorded recently at two separate residential locations at Beaudesert, approx. 60 km south of Brisbane, SE Qld. Two males and two females were captured between 23 April and 8 June 2004, flying around the introduced host plant *Senna surattensis* (Caesalpiniaceae). Three more adults were identified between 24 August and 11 September 2004; these were in perfect condition, suggesting local breeding during the winter months. Several eggs were collected on 24 August and reared in captivity, producing adults on 1-2 October. The related *C. gorgophone gorgophone* (Boisduval) has been recorded at one of the sites throughout the year, flying even after local morning frosts. - Notes for *Catopsilia scylla etesia* in Beaudesert - Wesley Jenkinson - **32**(8): 207-208 (2004).

Signeta tymbophora (Meyrick & Lower) [Hesperiidae] - During January 2004, two males and a female were collected at Vincent's Lookout (elevation 424 m) in the Watagan State Forest, near Newcastle, NSW. The males were feeding on the flowers of *Parsonsia staminea*, while the female was collected flying near clumps of *Gahnia sieberiana* further down the slopes. This locality is intermediate between those known previously. - An intermediate location for *Signeta tymbophora* (Meyrick & Lower, 1902) - Paul Bambach - **32**(9): 247 (2004[2005]).

Yoma sabina parva (Butler) [Nymphalidae] - Following initial sightings of this species in the Townsville district during March and June 2004 [see *Australian Entomologist* **32**(3): 134], a number of other sightings have been recorded: (1) at Kelso, upper Bohle River (P. Valentine), on 28 June, 28 August, 12 & 20 September, 30 November, 12, 18 & 19 December 2004, 6, 8, 9, 11, 15 & 19 January, throughout February (with numerous adults on 11 & 12 February), erratically during March, 3 April and 11 & 14 July 2005. Adults were mostly fresh. Females were observed laying eggs on *Ruellia* sp. (Acanthaceae) in December and January; (2) at Wulguru, a suburb of Townsville about 10 km from the Kelso location (A. & J. Dartnall); (3) at Paluma, N of Townsville (A. & J. Dartnall). This species has persisted well despite the failure of the normal wet season to eventuate (the fourth in a row). It is unlikely that it has been permanently established in Townsville prior to the recent sightings, given its conspicuous nature and the numerous butterfly enthusiasts resident in the area over the past 100 years. - Persistence of *Yoma sabina parva* (Butler) Lepidoptera: Nymphalidae in the Townsville region - Peter Valentine - **33**(4): 72-74 (2005).

THE REDISCOVERY OF *TAGIADES NESTUS* (C. FELDER) (LEPIDOPTERA: HESPERIIDAE: PYRGINAE) IN AUSTRALIA

PETER S. VALENTINE[1] and STEPHEN J. JOHNSON[2]

[1]*Tropical Environment Studies & Geography, James Cook University, Townsville, Qld 4811*

[2]*84 Pacific Parade, North Kirra, Qld 4225*

Abstract

Tagiades nestus korela Mabille is rediscovered in Torres Strait, Queensland, after almost 100 years. A breeding population is recorded on Dauan Island in northern Torres Strait, feeding on climbing yam vines, *Dioscorea* sp. (Dioscoraceae).

Introduction

Tagiades nestus (C. Felder) was first recorded in Australia from a single male, collected by H. Elgner in 1910 on Darnley Island in eastern Torres Strait (Waterhouse and Lyell 1914). This specimen appears to belong to *T. n. korela* Mabille, which occurs on mainland New Guinea and adjacent islands (Braby 2000). Since then, there have been no further records of the species in Australia.

In April 2004, we undertook a survey of butterflies on Dauan Island (9°25'S 142°32'E), in the northern sector of Torres Strait. This small island of around 400 ha is dominated by Mt Cornwallis and mostly comprises a patchwork of rocky slopes and vine thickets. A small settlement on the northeastern beach supports the Dauan community, with a few outlying homes along a single track that traverses the island from east to west along the northern base of the mountain. An extensive area of mangroves fringes the northwestern sandy flats at the base of Mt Cornwallis.

In April 2004, adults of an unidentified species of *Tagiades* Hübner were observed on Dauan I. but not collected. Subsequently, we found larvae in distinctive shelters on climbing yam vines (*Dioscorea* sp.: Dioscoraceae) growing under mango trees adjacent to vine thickets. Shelters were also found on vines in the northwestern area of the island, where yams are commonly grown as a garden crop. Larvae were collected and reared to adults, which were found to belong to *T. nestus* (Fig. 1).

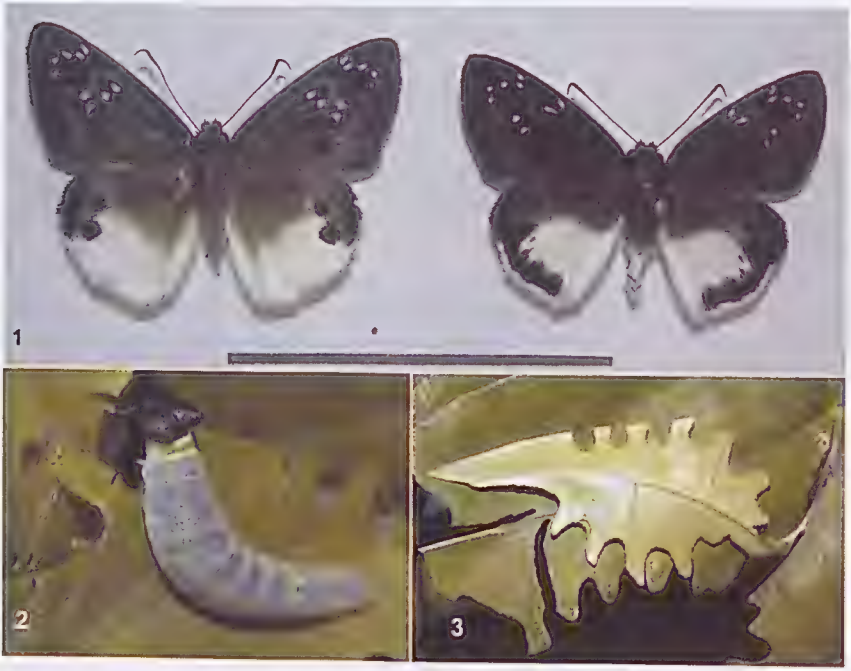
Discussion

Typical late instar larval shelters have very distinct lobes cut in the leaf edge (Fig. 3), and larvae of *T. nestus* are very similar to those of *T. japetus* (Stoll), having a black heart-shaped head, a pale body covered with tiny white spots and two large dorsal spots on the 9th abdominal segment (Fig. 2).

Adults of *T. nestus* and *T. japetus* (Fig. 1) can be readily separated, predominantly by the brown dorsal colour of the entire abdomen of *T. japetus*, compared with the distinct white abdomen of *T. nestus* (Parsons 1998). In addition, the upperside hindwing pattern of *T. nestus* differs from that of *T. japetus* in having a more continuous black hindwing margin. The

ground colour in *T. nestus* is also more distinctly black than in *T. japetus*, which has a more brownish hue. The size of the hyaline spots on the forewing also differ between the two species.

In Torres Strait, we have previously recorded *T. japetus janetta* Butler from Dauan, Moa and Darnley Is and it is interesting that the two species co-exist on Dauan and possibly also on Darnley I. It is likely that further collecting on other islands in the Torres Strait might reveal further populations of *T. nestus korela*, especially given the prevalence of yam vines in gardens.



Figs 1-3. *Tagiades* spp. (1) Adults of *T. japetus* (left) and *T. nestus* (right) [scale bar = 40 mm]; (2) final instar larva of *T. nestus*; (3) third instar larval shelter of *T. nestus*.

Acknowledgement

We thank the Dauan Island Council for permission to undertake the survey.

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NEW AND INTERESTING BUTTERFLY RECORDS (LEPIDOPTERA) FROM ISLANDS OF THE TORRES STRAIT, QUEENSLAND

C.E. MEYER[1], S.S. BROWN[2] and R.P. WEIR[3]

[1]*10 Anne Clark Avenue, Nicholls, ACT 2913*

[2]*19 Kimberley Drive, Bowral, NSW 2576*

[3]*1 Longwood Avenue, Leanyer, NT 0812*

Abstract

Zizula hylax dampierensis Rothschild is newly recorded from Dauan I. and *Catopyrops ancyra mysia* (Waterhouse & Lyell) and *Hypochrysops elgneri elgneri* (Waterhouse & Lyell) are newly recorded from Saibai I. A fourth female of *Nothodanis schaeffera caesius* (Grose-Smith) is reported from Murray I. and notes are included on the immature stages of *Hypolimnas antilope* (Cramer) from Murray I. and *Arhopala philander gander* Evans from Saibai I.

Introduction

The authors travelled throughout the Torres Strait in northern Queensland during the period 5-24 April 2001, visiting Thursday, Murray, Darnley, Saibai and Dauan Islands, and again during the period 25 April to 2 May 2002, visiting Thursday, Saibai and Dauan Islands. As a result, several new and interesting records of butterflies were made. Identifications were done using the reference works of Braby (2000) and Parsons (1998), plus material in the Australian National Insect Collection (ANIC), Canberra. Voucher specimens are deposited in the authors' collections.

Murray Island, 6-10 April 2001

NYMPHALIDAE

Hypolimnas antilope (Cramer)

Adults were common on Murray Island in early April. Males were encountered perching on high vantage points, head downwards, along roadsides, tracks and clearings throughout the island and displayed strong territorial behaviour, attacking any intruder before returning to perch on the same or adjacent vantage point. Females were encountered less frequently and were often found perched on or around *Pipturus argenteus* (Urticaceae), a known food plant for this butterfly in Papua New Guinea (Parsons 1998).

A single worn female placed in filtered sunlight in a plastic bag with cuttings of *P. argenteus* deposited an estimated 200-250 eggs (Fig. 1). The eggs and fresh cuttings were then transferred to an airtight container. The eggs were very small, less than 0.5 mm in diameter, round and yellow in colour. All hatched in 5-6 days. First instar larvae fed on the cuttings during the first day but later crawled off the plant and died. This may indicate that either *Pipturus* cuttings are somehow toxic to young larvae or the rearing conditions were unsuitable, or this may not be the host plant in the Torres Strait. The larvae showed no interest in cuttings of *Asystasia* sp. (Acanthaceae), placed in the

same container as the *Pipturus*. *Asystasia* spp. are known food plants for many other species of *Hypolimnas* Hübner in Australia (Braby 2000).

LYCAENIDAE

Nothodanis schaeffera caesius (Grose-Smith)

A single female was taken on Murray Island in the company of *Nacaduba cyanea manto* (Grose-Smith & Kirby), flying in dappled sunlight under the rainforest canopy. Four females have now been recorded from the island, with the other three collected in April 1989 by T.A. Lambkin and A.I. Knight (Lambkin and Knight 1990, Braby 2000). Interestingly, a male has yet to be collected from the island.

Dauan Island, 13-19 April 2001

LYCAENIDAE

Zizula hylax dampierensis Rothschild

Two males taken on Dauan Island, flying in a grassy glade adjacent to a small rainwater channel, represent the first record of this species from the island. Another male was collected in the same area during the subsequent visit in 2002. Within Australian limits, Braby (2000) recorded *Z. hylax attenuata* (T.P. Lucas) from as far north as Prince of Wales Island. Parsons (1998) recorded *Z. h. dampierensis* throughout mainland Papua New Guinea and on most outlying islands, including Daru I., Western Province. Daru I. is approximately 80 km NE of Dauan I., whereas Prince of Wales I. is some 140 km SSW of Dauan I. Specimens of *Zizula hylax* (Fabricius) from Dauan I. are a deeper purple on the upperside than are specimens from mainland Australia and they are therefore tentatively placed with subspecies *Z. h. dampierensis*, due to the closer proximity of Daru I. to Dauan I.

Saibai Island, 19-20 April 2001

LYCAENIDAE

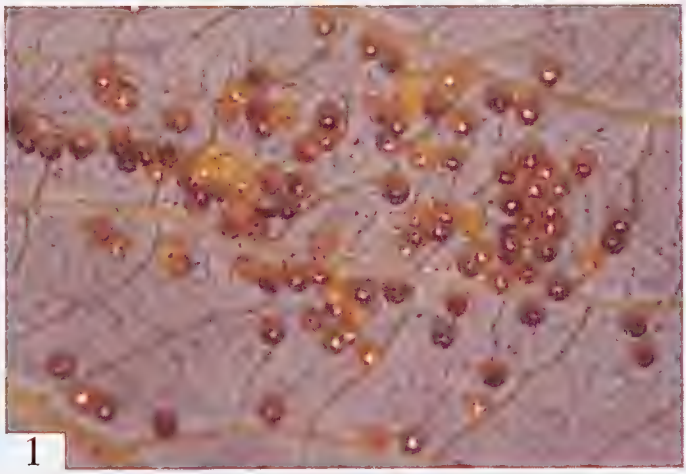
Catapyrops ancyra mysia (Waterhouse & Lyell)

Three pairs were taken flying on the verge of vine thicket near the cemetery on Saibai Island. This butterfly has been recorded previously from nearby Dauan I. (T.A. Lambkin pers. comm.), so it was not surprising to encounter it on Saibai I.

Arhopala philander gander Evans

The identity of this species, formerly listed as *Arhopala* sp. Saibai (*e.g.* Braby 2000), was resolved by Lambkin and Knight (2005). A mature larva was found on the inside of one of our netbags (CEM), following an unsuccessful attempt to net an adult perched among *Hibiscus tiliaceus* (Malvaceae) on Saibai Island. The larva did not appear to accept *H. tiliaceus*, *Terminalia catappa* (Combretaceae) or *Calophyllum inophyllum* (Clusiaceae) as a host plant, because there was no evidence of feeding scars on any of the cut plants

provided in the container during the week after capture and prior to pupation on 26 April 2001. A female emerged in Canberra 24 days later, on 20 May 2001. The final instar larva was 25 mm long, with its markings and structure resembling other *Arhopala* Boisduval larvae in the *centaurus* group in Australia. However, it was principally orange in colour. The pupa was black, differing from other *Arhopala* pupae in the group, which tend to be translucent green in colour (Parsons 1998, Braby 2000, authors pers. obs.). Pupal length was 19 mm, width 7.5 mm. Neither Lambkin and Knight (2005) nor Parsons (1998) provided any life history details for this species.



Figs 1-2. (1) *Hypolimnas antilope* eggs on *Pipturis argenteus* from Murray Island. (2) *Hypochrysops elgneri elgneri* female from Saibai Island: upper and undersides (forewing length 19 mm).

Saibai Island, 25 April 2002

LYCAENIDAE

Hypochrysops elgneri elgneri (Waterhouse & Lyell)

A single female (Fig. 2) was collected adjacent to mangroves on Saibai Island shortly before sunset. In colouration it appears midway between *H. e. elgneri* from Papua New Guinea (Parsons 1998) and *H. e. barnardi* Waterhouse from northern Queensland (Braby 2000). Sands and Fenner (1978) recorded *H. e. elgneri* for the first time from Papua New Guinea from localities in Central and Western provinces, and noted that both sexes collected close to Port Moresby were very similar to those from Prince of Wales I., the type locality for *H. e. elgneri*. On the upperside of the Saibai I. specimen, the orange-brown central area of the forewing is dark and reduced, as in *H. e. elgneri*, and on the underside the markings are well delineated and bold, as in *H. e. barnardi* from Iron Range, Cape York Peninsula. An examination of specimens (in ANIC) from Prince of Wales I. indicated that the Saibai I. specimen fits best with *H. e. elgneri*, although it is smaller than specimens from Rouku (Western Province, Papua New Guinea) in the Brandt Collection (ANIC).

Acknowledgements

The authors thank Mr Ron Day, Mrs Margaret Mau and Mr Terry Waia, the respective chairpersons of Murray, Dauan and Saibai Island councils, for permission to collect on the islands, Trevor Lambkin for his advice on previous records and Mr James Bon, AQIS Officer on Murray Island, for help with quarantine.

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INLAND BREEDING RECORDS FOR TWO MISTLETOE BUTTERFLIES (LEPIDOPTERA) FROM NORTHERN VICTORIA

MICHAEL F. BRABY

School of Botany and Zoology, The Australian National University, Canberra, ACT 0200

Abstract

New inland distribution records and evidence of breeding are provided for *Delias harpalyce* (Donovan) (Pieridae) and *Ogyris abrota* (Westwood) (Lycaenidae) from the Murray River near Tocumwal in northern Victoria. Their early stages are associated with *Muellerina eucalyptoides* (DC.) B.A. Barlow parasitising *Eucalyptus camaldulensis* Dehnh. in riverine tall woodland.

Introduction

Delias harpalyce (Donovan) and *Ogyris abrota* (Westwood) are restricted mainly to the temperate areas of southeastern Australia (Common and Waterhouse 1981), with the latter extending to upland areas in NE Qld (Braby 2000). Both species breed predominantly in the foothills and montane areas of the Great Dividing Range and nearby mountains, up to about 900 m, as well as in coastal areas. They are ecologically dependant on mistletoes as their larval food plants. In Victoria, *Muellerina eucalyptoides* (DC.) B.A. Barlow (Loranthaceae) is the sole larval food plant of *O. abrota* and one of several species used by *D. harpalyce* (Common and Waterhouse 1981, Braby 2000). The two butterfly species do not extend far inland on the slopes and plains west or north of the Great Divide, especially *O. abrota* (Dunn and Dunn 1991). In Victoria, individuals of *D. harpalyce* are occasionally recorded from the mallee in the far northwest of the State (Gullan *et al.* 1996, Museum Victoria 2002, F. Douglas pers. comm.), but these are believed to be vagrants/migrants dispersing far beyond the breeding range (Braby 2000). The northernmost limit of *O. abrota* in Victoria is 2 km SE of Harcourt (*c.* 25 km S of Bendigo) in the central area (Dunn 1983); the species otherwise is not known from the northern or northwestern areas of the State (Gullan *et al.* 1996, Museum Victoria 2002). Here I document new breeding localities for both species from the Murray River in inland northern Victoria.

Observations

Delias harpalyce (Pieridae)

Three males were recorded on the Murray River at Tocumwal, NSW, on 27 September 1987. The individuals were at rest, with wings closed and folded over their backs, perched low down on the foliage of River Red Gum, *Eucalyptus camaldulensis* Dehnh. growing on the bank of the river very close to the town. They were in 'fresh' condition and had probably just emerged; one male was collected and retained. Subsequently, on 24 December 1989, several empty pupal cases were recorded nearby at Tocumwal Regional Park, Vic, on *Muellerina eucalyptoides* parasitising *E. camaldulensis*. The mistletoe clump, situated about 1.5 m above ground level, grew on the trunk of the host tree. Tocumwal Regional Park lies directly opposite the township of Tocumwal on the southern side of the Murray River.

Ogyris abrota (Lycaenidae)

Early stages were recorded at Tocumwal Regional Park, Vic. (35°48'58"S, 145°33'31"S; 110 m a.s.l.) on 2 March 2005. Numerous empty, white egg shells and several empty, pale brown pupal cases were collected from a large pendulous clump of *Muellerina eucalyptoides*, also growing low down (*c.* 3 m above ground level) and parasitising the trunk of a large *E. camaldulensis*. Old larval feeding scars were also evident on the foliage. No other mistletoe species were present on the host tree. The eggs were found singly or, sometimes, in small groups on the adventitious roots of the mistletoe and on the bark, especially the edges, of the host tree directly beneath or adjacent to the roots of the mistletoe. The pupae were found under loose bark of the host tree directly beneath the mistletoe and were well concealed. No live stages were present, but the condition of the eggs and pupae suggested they were possibly only one or two seasons old.

Discussion

The records of early stages and other evidence from northern Victoria provide new inland breeding records for *Delias harpalyce* and *Ogyris abrota*. The occurrence of *O. abrota* near Tocumwal, in particular, provides a substantial extension to the known range of this species in that State (*c.* 170 km NE of Harcourt). Both butterfly species were recorded breeding on the same mistletoe species in riverine tall woodland dominated by *Eucalyptus camaldulensis*, along the flood plain of the Murray River. It is highly probable that this habitat provides suitable microclimatic conditions of higher moisture and lower temperature to sustain breeding populations in the otherwise hot, dry environment of the inland northern plains. Further field studies are required to determine the extent to which both species extend further downstream (inland) along the Murray River corridor. It is likely that populations of these two species at Tocumwal are isolated from those further south on the slopes and foothills of the Great Dividing Range, but may well be connected with those further east near the headwaters of the Murray River in Kosciuszko National Park, NSW and Alpine National Park, Vic.

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A NEW SUBSPECIES OF *HESPERILLA CRYPSARGYRA* (MEYRICK) (LEPIDOPTERA: HESPERIIDAE) FROM SOUTHERN QUEENSLAND AND A NEW STATUS FOR *HESPERILLA HOPSONI* WATERHOUSE

STEPHEN J. JOHNSON[1] and PETER R. WILSON[2]

[1]*Queensland Museum, PO Box 3300, South Bank, Qld 4101*

[2]*Queensland Department of Natural Resources and Mines, Enterprise St, Bundaberg, Qld 4670*

Abstract

Hesperilla crypsargyra binna subsp. n. is described and figured from an isolated population within the Lamington National Park in southern Queensland. Characters are given to enable separation from the closely related but geographically isolated *H. c. crypsargyra* (Meyrick). The new geographical arrangement together with examination of genitalia and other characters indicate that *H. hopsoni* Waterhouse stat. n. is specifically distinct from *H. crypsargyra*. The immature stages of *H. c. binna* are recorded on *Gahnia insignis* S.T. Blake (Cyperaceae).

Introduction

Hesperilla crypsargyra (Meyrick) has a discontinuous distribution from southern Queensland to western Victoria (Braby 2000). Nominotypical *H. c. crypsargyra* occurs in central coastal New South Wales and two additional subspecies have been described. *H. c. hopsoni* Waterhouse is a distinctive montane population extending from Stanthorpe in southern Queensland (Common and Waterhouse 1981) to the Barrington Tops (Waterhouse 1927) and Mt Allyn (Muller 1991) in New South Wales. *H. c. lesouefi* Tindale was proposed for a few isolated Victorian populations (Tindale 1953), even though differences from the nominotypical population were minimal.

The discovery of additional, morphologically intermediate populations has prompted some authors to question the validity of the separation of *H. c. lesouefi* from *H. c. crypsargyra* (Dunn and Dunn 1991, Braby 2000), even though the presence of intergrades does not invalidate subspecific status under accepted definition (Torre-Bueno 1978).

During a visit by one of us (PRW) to Lamington National Park in southern Queensland, in late November 2002 (Wilson 2004), numerous small dark skippers were observed flying in an area of montane heath. These were suspected to be *H. crypsargyra*. The area was revisited in November 2003 and specimens collected to confirm their identity. They were closest in appearance to *H. c. crypsargyra* but separated from the nearest known population of that subspecies by more than 500 km.

Examination of the southern Queensland material has revealed consistent differences from *H. c. crypsargyra* and subspecific status is proposed here to define this isolated population. It occurs approximately 120 km from the northernmost population of *H. c. hopsoni* and closer examination of a range of characters from both adult and immature stages has led to the conclusion that *H. hopsoni* is specifically distinct from *H. crypsargyra*.

Hesperilla crypsargyra binna subsp. n.

(Figs 1-2, 7-8, 13, 17, 20)

Types. Holotype ♂, QUEENSLAND: Daves Creek track, Lamington National Park, 28.221S, 153.206E, em. 9.xi.2004, S.J. Johnson (in Queensland Museum, Brisbane, Reg. No. T99263). *Paratypes:* 6 ♂♂, same data as holotype but 15.xi.2003; 1 ♀, em. 14.xi.2004 (in Queensland Museum); 23 ♂♂, 2 ♀♀, same data as holotype but 15.xi.2003 (in Museum of Tropical Queensland, Townsville); 3 ♂♂, 3 ♀♀, 4 km SE Binnaburra, 28.2217S, 153.2064E, 15.xi.2003, P.R. Wilson; 1 ♂, same data but em. 18.xi.2003, P.R. Wilson (in P.R. Wilson collection); 9 ♂♂, same data as holotype but 15.xi.2003 (in P.S. Valentine collection); 14 ♂♂, 1 ♀, Daves Creek Track, Binna Burra N.P., 4.xi.2004; 10 ♂♂, 1 ♀, 20.xi.2004; 8 ♂♂, 4 ♀♀, 27.xi.2004, all C.G. Miller (in C.G. Miller collection).

Description. Male (Figs 1, 7). Average wingspan 22.7 mm (n = 74). Forewing upperside dark brown-black with slight yellow suffusion basally, a prominent orange-yellow spot in cell, 3 subapical spots, a median band of 2 spots between M_3 and CuA_2 a thin, wavy sex brand extending from M_3 to inner margin and a faint subterminal band. Forewing underside brown-black with yellow costal streak, spots as above and a faint pale streak along inner margin. Hindwing upperside dark brown-black with median band of 2 wedge-shaped spots between M_3 and CuA_2 and, rarely, an additional small spot anterior to 1A+2A; termen chequered. Hindwing underside brown-black with yellow suffusion along veins, a small wedge-shaped silver spot in cell, an additional submedian silver spot anterior to Rs, a median band of 3 prominent silver spots joined by a silver stripe along 1A+2A to subterminal band of 5 silver spots; termen chequered.

Female (Figs 2, 8). Average wingspan 24.4 mm (n = 12). Upperside similar to male but termen more rounded, with additional median and post median spots and subterminal band more pronounced. Underside similar to male.

Male genitalia (Fig. 17). Vinculum slightly sigmoid-shaped; tegumen sloping posteriorly to rounded, hirsute, beak-like uncus, deflexed posteriorly; gnathos with 2 oval sclerotised spinose patches; valva tapering to a point anteriorly and slightly expanded distally; ampulla serrated and sloping posteriorly; harpe strongly sclerotised with serrate upcurved tip lying flush with ampulla; aedeagus expanded posteriorly and tapering to a narrow, rounded tip anteriorly; juxta with lateral ovoid sclerotised bodies.

Etymology. Binna is the local aboriginal dialect word for the southern cliffs.

Comments. All populations of *H. crypsargyra* show variation in adult size but adults of *H. c. binna* are more uniform and consistently smaller than those of *H. c. crypsargyra* (Table 1). Average wingspan of *H. c. binna* is 22.7 mm (n = 74) for males and 24.4 mm (n = 12) for females, compared with 25.42 mm (n = 97) and 27.13 mm (n = 50) respectively for *H. c. crypsargyra*. The postmedian band on the forewing upperside is reduced in *H. c. binna*, being represented by three patches between Rs and M_3 and, in occasional

specimens, with a vestigal patch anterior to CuA_1, whereas all *H. c. crypsargyra* examined had 5-6 patches extending to CuA_2 or 1A+2A (see Figs 1-4). On the hindwing underside all specimens of *H. c. binna* have an uninterrupted silver stripe along the anal vein joining the median and subterminal silver patches, whereas most specimens (84%) of *H. c. crypsargyra* have this stripe interrupted. *H. c. binna* have much less yellow scaling basally anterior to $Sc+R_1$ and Rs compared with *H. c. crypsargyra* (see Figs 7-10).

Tindale (1953) proposed *H. c. lesouefi* on the basis of reduced size, darker ground colour and reduced segments in the postmedian band of the hindwing. Examination of a large series from throughout Victoria and southern New South Wales has shown no differences from *H. c. crypsargyra* in the colour of the forewings or in the number of segments in the hindwing postmedian band (see Table 2). However, specimens from southern NSW and eastern Victoria are consistently smaller than those from the Blue Mountains area (see Table 1) and are better placed in *H. c. lesouefi*.

Table 1. Wingspan measurements of *Hesperilla crypsargyra* populations.

Location	males	n	females	n
Southern Qld	22.7 mm	74	24.41 mm	12
Blue Mtns, NSW	25.42 mm	97	27.13 mm	50
Victoria	23.66 mm	80	25.41 mm	62
Southern NSW	24.70 mm	10	26.25 mm	4

Table 2. Segments in hindwing postmedian band of *H. crypsargyra* populations.

Taxon	Range	Average	n
Southern Qld.	2-5	3.2	86
Blue Mtns, NSW	4-6	5.72	87
Victoria	4-6	5.85	142
Southern NSW	4-6	5.85	14

Host plant. The host plant at Lamington National Park is *Gahnia insignis* S.T. Blake (Cyperaceae), growing in an area of montane heath overlying rhyolite/trachyte pavement (Fig. 16). This is a fine, soft-leaved plant with a scrambling habit. A search of the Queensland Herbarium database has shown a restricted distribution in Queensland, occurring at only 4-5 sites in the southeast and on Hinchinbrook Island near Ingham in the north. There are records from Whian Whian State Forest and near Lismore in northern NSW but no search for additional locations in that State has been undertaken.

Several large stands of *G. insignis* occur as an understorey plant in wet eucalypt forest but not overlying rhyolite or trachyte rock. No adults or signs

of larval feeding have been found in these situations, despite some being within 5 km of the Daves Creek site. We have produced a composite map of known records of *G. insignis* together with vegetation and soil types and only three sites showed host plant growing on rhyolite/trachyte rock pavement. The remaining two of these sites are inaccessible but both lie within protected areas and future surveys of these sites are recommended to search for additional populations.

H. c. crypsargyra and *H. c. lesouefi* feed exclusively on *G. microstachya* and *H. hopsoni* feeds on *G. sieberiana* and *G. grandis* (Braby 2000).

Biology. Voltinism and flight period remain unknown at this stage. Adults are common in November but visits to the site in December 2002 (SJJ) and March 2004 (C.G. Miller pers. comm.) failed to locate adults. A search for immature stages has yielded only pupae in early November and early instar larvae in late December, which further suggests that the species is univoltine with a restricted flight period.

Hesperilla hopsoni Waterhouse, stat. n.

(Figs 5-6, 11-12, 15, 19, 22)

Hesperilla crypsargyra hopsoni Waterhouse, 1927: 282.

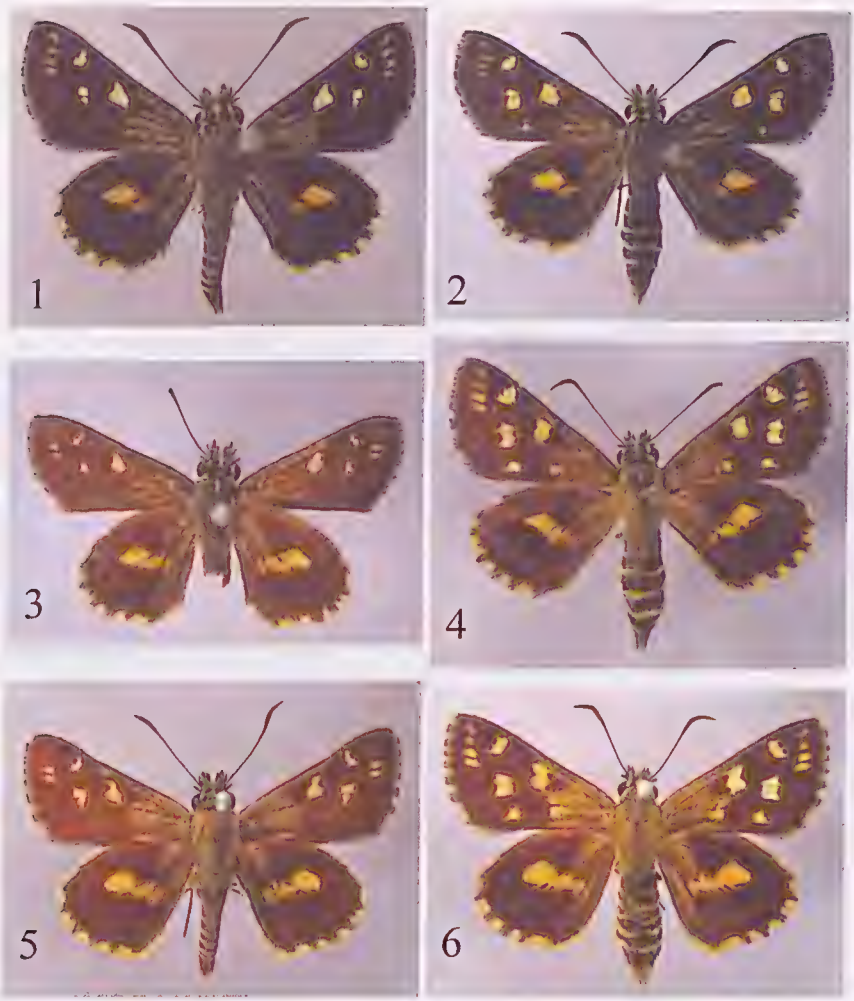
Material examined. 25 ♂♂, 25 ♀♀, (in Australian National Iinsect Collection, Canberra, Museum of Tropical Queensland and Queensland Museum).

Description. An adequate description was given by Waterhouse (1927).

Comments. The historical site for *H. hopsoni* at Mt Norman, near Stanthorpe in SE Qld, is 120 km from the Lamington Plateau location of *H. c. binna*, although at a higher altitude. Specimens from this site have been confirmed as *H. hopsoni* by Ted Edwards (pers. comm.), indicating that this population is an extreme northern extension of the montane *H. hopsoni* and not an extension of the Lamington National Park population of *H. c. binna*.

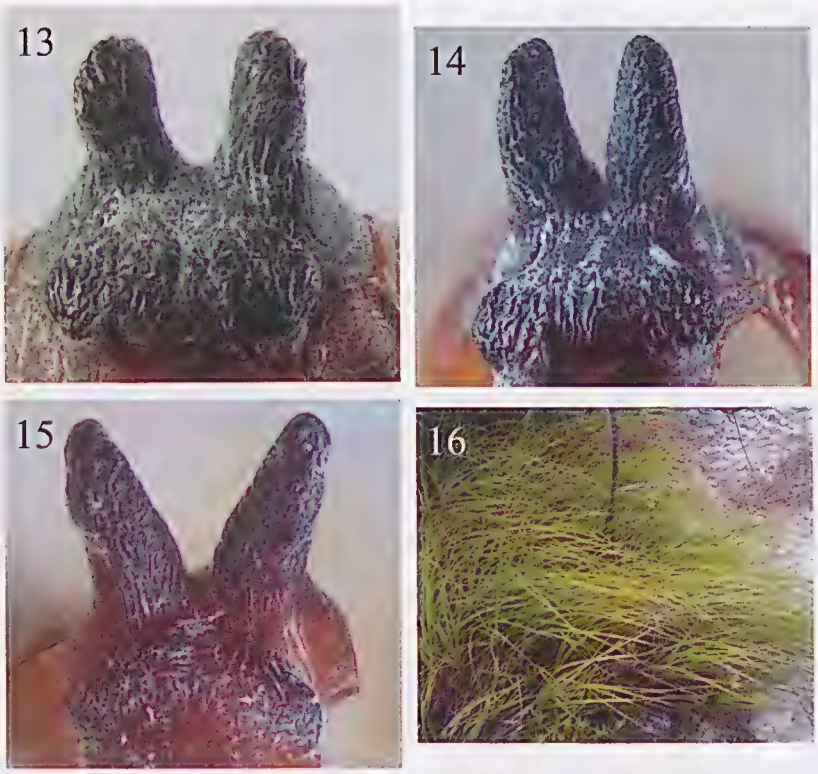
H. hopsoni is substantially larger than *H. crypsargyra*, with an average wingspan of 30 mm in males and 32 mm in females, compared with 26.6 mm and 30.1 mm for *H. c. crypsargyra* and 22.7 mm and 24.4 mm for *H. c. binna* respectively. As noted by Waterhouse (1927), the underside forewing colour in *H. hopsoni* is brown, compared with red-brown in *H. c. crypsargyra*, while the spots are orange rather than yellow and there is a broad orange streak along the upper edge of the cell. On the hindwing the veins are orange and the silver spots are much larger.

The following differences are present in the male genitalia of the three taxa (see Figs 17-19): the tegumen of *H. hopsoni* is shorter and has a more angular dorsum than the others; in the valvae, the serrate ampulla of *H. c. binna* arises gradually anteriorly, whereas those of *H. c. crypsargyra* and *H. hopsoni* arise acutely; the spinose patches on the gnathos are smaller and more angular in *H. hopsoni* and the ampulla of *H. c. crypsargyra* is more serrate.



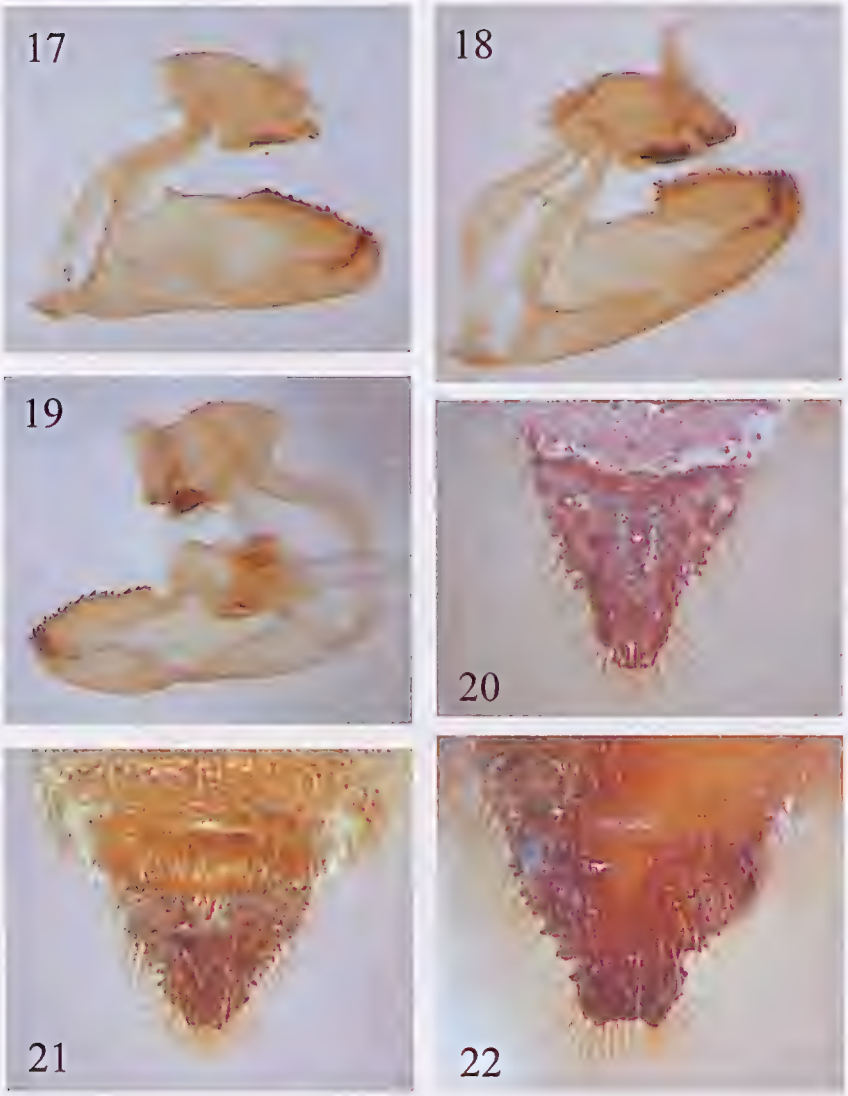
Figs 1-6. *Hesperilla* spp., uppersides. (1) *H. crypsargyra binna* subsp. n., holotype male; (2) *H. c. binna* subsp. n., paratype female; (3) *H. c. crypsargyra* male; (4) *H. c. crypsargyra* female; (5) *H. hopsoni* male; (6) *H. hopsoni* female.

Figs 7-12. *Hesperilla* spp., undersides. (7) *H. crypsargyra binna* subsp. n., holotype male; (8) *H. c. binna* subsp. n., paratype female; (9) *H. c. crypsargyra* male; (10) *H. c. crypsargyra* female; (11) *H. hopsoni* male; (12) *H. hopsoni* female.



Figs 13-16. Pupal caps of *Hesperilla* spp. and host plant of *H. c. binna* subsp. n. (13-15) Pupal caps: (13) *H. crypsargyra binna* subsp.n.; (14) *H. c. crypsargyra*; (15) *H. hopsoni*. (16) *Gahnia insignis* growing in an area of exposed rhyolyte at Lamington National Park, SE Qld.

The egg of *H. c. crypsargyra* has 27-29 vertical ribs (Grund 1998), whereas that of *H. hopsoni* has 47 ribs (Braby 2000). *H. c. crypsargyra* and *H. c. binna* each appear to be restricted to a single host plant with relatively small leaves and have not adapted to widespread, larger-leaved forms used by *H. hopsoni* and other *Hesperilla* Hewitson species. Pupal opercula have been regarded as diagnostic within *Hesperilla* species (Grund 1998) and the projections of *H. c. binna* are approximately half the length of those of *H. c. crypsargyra* and *H. hopsoni*. The projections of the pupal operculum of *H. hopsoni* are more divergent than those of *H. c. crypsargyra* (see Figs 13-15). The cremaster of *H. hopsoni* has a deeper dorsal concavity and broader tip than that of *H. c. crypsargyra* and that of *H. c. binna* is more elongated than those of the other two taxa (see Figs 20-22).



Figs 17-22. Male genitalia and pupal cremasters of *Hesperilla* spp. (17-19) Male genitalia: (17) *H. crypsargyra binna* subsp. n.; (18) *H. c. crypsargyra*; (19) *H. hopsoni*. (20-22) Pupal cremasters: (20) *H. c. binna* subsp. n.; (21) *H. c. crypsargyra*; (22) *H. hopsoni*.

The numerous differences between the three taxa suggest that they have been geographically and genetically isolated for sufficient time to permit speciation to occur. However, the similar morphologies of *H. c. binna* and *H. c. crypsargyra* indicate subspecific status. A more detailed understanding of phylogenetic relationships must await genetic analyses.

Acknowledgements

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THE PHYTOPHAGOUS INSECT FAUNA ASSOCIATED WITH *ACACIA NILOTICA* SSP. *INDICA* (MIMOSACEAE) IN AUSTRALIA

W.A. PALMER[1], M.P. VITELLI[2,3] and G.P. DONNELLY[1,4]

[1]*Alan Fletcher Research Station, Queensland Department of Natural Resources & Mines, PO Box 36, Sherwood, Qld 4075*

[2]*Tropical Weeds Research Centre, Queensland Department of Natural Resources & Mines, PO Box 187, Charters Towers, Qld 4820*

[3]*Present address: 26 King St, Charters Towers, Qld 4820*

[4]*Present address: 95 Strickland Terrace, Graceville, Qld 4075*

Abstract

A survey of the phytophagous insect fauna associated with the exotic weed *Acacia nilotica* ssp. *indica* (Benth.) Brenan was conducted throughout Queensland from 1979-89. Forty-two species, many of which are also associated with native *Acacia* spp., were found on this plant. The more important species included the wattle cicada *Cicadetta oldfieldi* (Distant), that may be implicated in 'dieback' of *A. nilotica*, the seed-feeding bruchids *Caryedon serratus* (Olivier) and *Bruchidius sahlbergi* Schilsky, the cerambycid twig girdlers *Platyomopsis* spp. and *Ancita marginicollis* (Boisduval) and the termites *Mastotermes darwiniensis* Froggatt and *Coptotermes* sp. Two exotic species released during the study period, *B. sahlbergi* in 1982 and the gracillariid *Cuphodes profluens* (Meyrick) in 1983, have not impacted on the abundance of the host plant.

Introduction

Prickly acacia, *Acacia nilotica* ssp. *indica* (Benth.) Brenan, is one of the worst woody weeds of northern Australia and is a 'Weed of National Significance' (Thorp and Lynch 2000). It was introduced into Australia in the 1890s and used as a shade and fodder tree in the early 1900s. It now infests over 7 million hectares of the Mitchell grass downs of western Queensland (Mackey 1997) and has the potential to convert this area from a natural grassland into a woody savannah.

Prickly acacia was recognised as a serious weed after a dramatic increase in its abundance in the mid 1970s, caused by a series of wet years and a switch in enterprises from sheep to cattle, and investigations commenced to find biological control agents. As part of the biological control project, faunal studies of the insects associated with *A. nilotica* have been undertaken in Pakistan (Mohyuddin 1981), Kenya (Marohasy 1995) and South Africa (R. Stals, unpublished). The significance of these and other studies in relation to biological control and collecting technique has been discussed (Marohasy 1995, Palmer 1996). These initiatives led to a number of insects being imported by the Alan Fletcher Research Station for further study and, ultimately, to six species being released in Australia. The six insects were a seed feeding bruchid beetle, *Bruchidius sahlbergi* Schilsky, released in 1982, a tip boring gracillariid moth, *Cuphodes profluens* (Meyrick), released in 1983, a leaf feeding chrysomelid beetle, *Homichloda barkeri* (Jacoby), released in 1996, two geometrid moths, *Chiasmia inconspicua* (Walker) and *C. assimilis* (Walker), released in 1999, and a noctuid moth, *Cometaster pyrula* (Hoppfer), released in 2003.

Before exotic agents are introduced in biological control projects, it is desirable to ascertain the insect fauna (both native and exotic) that has colonised the exotic plant (Harley and Forno 1992). One reason such studies need to be undertaken early in a biological control project is to ensure that the considerable effort and resources necessary to introduce an agent are not wasted on a species that is already present. A second reason is that a faunal study might indicate vacant ecological niches that could be exploited with appropriate introductions. Faunal studies have been conducted in Australia for the exotic leguminous weeds mimosa, *Mimosa pigra* L., which had been colonised by 114 species (Wilson *et al.* 1990), and broom, *Cytisus scoparius* L. (Link), which was colonised by nine species (Memmott *et al.* 2000).

The insect fauna associated with prickly acacia was not known, although the fauna of the Australian acacias has been described in general terms. The insect fauna associated with the Australian *Acacia* spp. is characterized by lacking mutualistic ants, having numerous foliage-mining insects (all Lepidoptera) on the phyllodinous species, having many gall-forming insects from the Eriophyiidae, Cecidomyiidae, Hymenoptera and Thysanoptera, having a number of curculionid but no bruchid seed feeders, and having a rich psyllid fauna (New 1984).

A survey was therefore made of the insects associated with prickly acacia in Australia, which began prior to the introduction of the first biological control agents. The results of this and subsequent surveys made over the next decade, by which time *B. sahlbergi* and *C. profluens* had been released, are reported here.

Materials and methods

Various people in the department undertook the survey over nearly ten years. It commenced in 1979 with a number of dedicated collecting trips to areas infested with prickly acacia. Thereafter the survey was continued opportunistically over the next decade. In this manner, most areas in Queensland infested with prickly acacia were surveyed, including both the Mitchell grass downs (an area roughly bounded by Hughenden, Cloncurry, Winton and Alpha) and the coastal area around Bowen, where severe infestations of the tree also occur.

Insects were collected by visually inspecting the trees or by beating the branches over an insect tray. Prickly acacia is sharply spined which precluded the use of sweeping nets, which would otherwise have been a preferred method of capture. When evidence of internal infestation was present, the plant part was removed and placed in an emergence enclosure to allow the capture of adults. Pods were also regularly collected to allow seed feeders to emerge. Immatures were reared to maturity to obtain adults for identification. Specimens of most species have been retained in the collections at the Alan Fletcher Research Station and details of the collections have been entered into a computer database (Palmer 1995).

All insect specimens were submitted to specialist taxonomists for identification. In many instances, complete identification was not obtained. Often it was not possible to determine whether the insect was actually feeding on *A. nilotica*. We report here all the species belonging to known phytophagous taxa with the exception of pollen and nectar gatherers and adult Lepidoptera and Diptera. The list therefore undoubtedly includes some species that are casual visitors to the plant.

Results

Some 42 phytophagous insect species in five orders and 24 families were collected on prickly acacia with the Coleoptera (59% of species) and Lepidoptera (24%) being well represented (Table 1).

Table 1: Phytophagous insects found on prickly acacia in Qld. (a) - an asterisk (*) indicates the insect was endophagous; (b) - R = rare, O = occasional, C = common.

Species	Life stage collected	Plant part (a)	Freq-uency (b)	Association with native *Acacia* spp.
COLEOPTERA				
Belidae				
Belus semipunctatus (F.)	adult	tip	O	Yes
Bostrichidae				
Bostrychopsis jesuita (F.)	adult	stem*	C	Yes
Xylobisca sp.	adult	stem*	R	
Xylobisca sp. 1	adult	stem*	R	
Bruchidae				
Bruchidius sahlbergi Schilsky	all stages	seed*	C	
Caryedon serratus (Olivier)	all stages	seed*	C	Yes
Buprestidae				
unidentified sp.	adult		R	
Cerambycidae				
Ancita didyma Blackburn	larva, adult	stem*	R	Yes
Ancita marginicollis (Boisduval)	larva, adult	stem*	C	Yes
Ceresium sp.	larva	stem*	R	
Ceresium sp. 1	larva	stem*	R	
Chlorophorus curtisi (L. & G.)	adult	flower	R	
Piesarthrius sp.	larva	stem*	O	
Platyomopsis humeralis (White)	larva, adult	stem*	O	
Platyomopsis sp.	larva, adult	stem*	C	
unidentified sp.				
Chrysomelidae				
Monolepta australis (Jacoby)	adult	leaf	C	

Species	Life stage collected	Plant part (a)	Freq-uency (b)	Association with native *Acacia* spp.
COLEOPTERA (cont.)				
Curculionidae				
Leptopius sp.	adult	tip	R	Yes
Leptopius sp. 1	adult	tip	R	Yes
Leptopius sp. 2	adult		R	Yes
Lixus sp.	adult	flower	R	
unidentified sp.	adult		R	
Rhipiceridae				
Rhipicera neglecta Emden	adult		C	
HEMIPTERA				
Coreidae				
Mictis profana (F.)	all stages	tip	O	Yes
Lygaeidae				
Oxycarenus luctuosus (Mont. & Sig.)				
Scutelleridae				
Coleotichus costatus (F.)	adult	pod	O	Yes
Cicadidae				
Cicadetta oldfieldi (Distant)	nymph, adult	root	C	Yes
ISOPTERA				
Mastotermitidae				
Mastotermes darwiniensis Froggatt	all stages	root, stem	C	
Rhinotermitidae				
Coptotermes sp.	all stages	stem	C	Yes
LEPIDOPTERA				
Gelechiidae				
Mesophleps palpigera (Walsingham)	larva	seed	R	
Geometridae				
Eucyclodes sp. 1	larva	pod	R	
Zermizinga indocilisaria (Walker)	larva	leaf	O	
Oecophoridae				
unidentified sp.	larva	stem*	C	
Pieridae				
Eurema hecabe (L.)	larva	leaf	O	Yes

Species	Life stage collected	Plant part (a)	Freq-uency (b)	Association with native *Acacia* spp.
LEPIDOPTERA (cont.)				
Psychidae				
unidentified sp.	larva	leaf	C	
Pterophoridae				
unidentified sp.		pod	R	
Pyralidae				
unidentified sp.	larva	pod	R	
Tortricidae				
Cryptophlebia ombrodelta (Lower)	larva	pod*, seed	O	Yes
unidentified sp.				
THYSANOPTERA				
Aelothripidae				
Desmothrips sp.	adult	flower	R	
Thripidae				
Frankliniella schultzei (Trybom)	adult	flower	R	Yes
Thrips imaginis Bagnall	all stages	flower	C	Yes

The wattle cicada *Cicadetta oldfieldi* is well known as an associate of native *Acacia* spp. and was found with prickly acacia. The nymphs feed on the roots and emerge from the soil in late summer to shed their final exuviae while attached to a tree trunk. Counts of emergence holes revealed densities as high as 1 hole per 10 cm^2 around the bases of prickly acacia. The adults feed on the tree and oviposit in new growth. This insect has been implicated in a 'dieback' of *A. nilotica* in Australia (Tomley 1995). Adults of a possible parasite of cicada nymphs, *Rhipicera neglecta* (Coleoptera), have also been collected in numbers from prickly acacia and the cicada burrows beneath the trees.

Two bruchids, the imported *Bruchidius sahlbergi* and the cosmopolitan, historically naturalized *Caryedon serratus*, are now commonly found in prickly acacia pods and seeds throughout all areas infested with prickly acacia. The two species can be distinguished by the shape and position of the egg and by the emergence holes from seeds. Eggs of *C. serratus* are laid on the seed or on the side of seed pods and are covered by a pearly white dome, while those of *B. sahlbergi* are yellow and oviposited along the margin of opened pods. *Caryedon serratus* leave the seed as prepupae through irregular, small holes in the seed and spin cocoons outside the seed for pupation. *Bruchidius sahlbergi* pupate inside the seed and adults emerge from a large round hole. Both species are multivoltine and continuous breeders.

The longicorn beetles, *Platyomopsis* spp. and *Ancita marginicollis*, are twig girdlers that were quite commonly encountered. Females chew three or more ringbarks about 1 m from the distal end of branches and insert eggs under flaps of bark near the girdling marks. Girdling results in the death of the branch above the girdles allowing early larval instars to develop unhindered by sap. Later larval feeding below the ringbarking results in the death of the branch above the tunnelled section. The larvae of another longicorn, the acacia borer *Piesarthrius* sp., feed in the sapwood and heartwood of the plant before internally girdling the main stem just above ground level and pupating in the stump.

Branches were attacked by larvae of an unidentified oecophorid wood moth that bore holes into the heartwood in the fork of branches and feed on the bark and sapwood, under a camouflage of chewed up wood and frass webbed together.

At least two termites, the giant termite *Mastotermes darwiniensis* and the smaller *Coptotermes* sp., attack sapwood and heartwood of mature trees. Symptoms of attack are weakening of the tree, branches breaking off, channels of mud throughout the trunk and branches, and loss of leaf cover. The entire tree may fall over during a storm or windy weather.

Although not collected in the field, the cottony cushion scale, *Icerya purchasi* Maskell, has been found on potted plants grown at the Alan Fletcher Research Station and has become a laboratory pest.

Discussion

Exotic, introduced plants invariably have a smaller insect fauna associated with them in their new habitat than they have in their native range (Goeden 1974) and this was also the case with prickly acacia. Some 42 species were found on prickly acacia, whereas the phytophagous insect faunas known from *Acacia nilotica* in Pakistan, India, Kenya and South Africa are now estimated to be at least 69, 64, 116 and over 400 species respectively (W. Palmer, unpublished).

Prickly acacia may well have been one case which did not conform to the general hypothesis that introduced plants have a smaller insect fauna. Australia has a rich flora in the Mimosaceae, particularly in the tribe Acacieae. There are over 1000 endemic taxa in *Acacia* (Cowan 1998) and it might have been anticipated that many insect species found on native congeners would colonise prickly acacia. However, a large number of species was not found on prickly acacia and insects were rarely particularly abundant or damaging. The reason is probably that prickly acacia belongs to the subgenus *Acacia*, which is represented by only nine endemic species, while almost all of the Australian taxa belong to subgenus *Phyllodineae* (Maslin 2001).

A variety of insects colonised prickly acacia after its introduction nearly a century ago. This assemblage includes species attacking the foliage, roots, the trunk and branches and the reproductive parts of prickly acacia. As would be anticipated, many of these insects are generalists associated with other leguminous species.

With the possible exception of the cicada *Cicadetta oldfieldi,* there was little indication that the insect fauna was causing any appreciable effect on the plant populations although, when plants become stressed by drought or other factors, the incidence of secondary attack by longicorn beetles and termites increased. In considering the introduction of further biocontrol agents, it appeared that all niches, with the possible exception of the seed feeders, were underexploited and that it would be undesirable to exclude the agents of any niche from future searches.

Of the six species introduced for biological control, only *Bruchidius sahlbergi,* released in 1982, had clearly established and this insect was regularly found during the latter part of the survey. However, it is now considered to be having little impact (Radford *et al.* 2001). The gracillariid *Cuphodes profluens* (Meyrick), released in 1983, was not seen during this survey and is now thought not to have established. The other four species, *Homichloda barkeri, Chiasmia inconspicua, C. assimilis* and *Cometaster pyrula*, were released after the conclusion of the survey.

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CONFIRMATION OF *APPIAS CELESTINA* (BOISDUVAL) (LEPIDOPTERA: PIERIDAE) IN AUSTRALIA

R.P. WEIR[1], C.E. MEYER[2] and S.S. BROWN[3]

[1]*1 Longwood Avenue, Leanyer, NT 0812*
[2]*10 Anne Clark Avenue, Nicholls, ACT 2913*
[3]*19 Kimberley Drive, Bowral, NSW 2576*

Abstract

A single male *Appias celestina* (Boisduval) was collected at Iron Range, Queensland, in July 1999, confirming the existence of this species in Australia. It is not known if it is permanently established on Cape York Peninsula.

Introduction

Appias celestina (Boisduval) occurs from Waigeo, Kai and Aru Is in eastern Indonesia to Papua New Guinea, including its adjacent islands and the Bismark Archipelago (Braby 2000, Edwards *et al.* 2001). Four undated specimens, mostly in poor condition, were recorded from Cape York, Queensland, by Braby (2000), which he suggested might be vagrants from Papua New Guinea. Waterhouse and Lyell (1914) stated 'It is with considerable doubt that we include this species. We have records of only three examples all of which are supposed to have come from Cape York: none of them are dated but we have no reason to doubt any other of Miskin's records'. Waterhouse (1932) also alluded to H. Elgner residing on Cape York for two years without encountering the species. However, in July 1999, a single male (Figs 1-2), in excellent condition, was collected by one of us (RPW) flying with *A. ada* (Stoll) at Iron Range, Cape York Peninsula.

Figs 1-2. *Appias celestina*, male. (1) upperside; (2) underside.

Discussion

The label data of the four previously known specimens are as follows: 1 ♂, Cape York, C.E.B., AN31 000884 (in Queensland Museum, Brisbane, Reg. No. T100918); 1 ♀, 183, Cape York, AN31 00883 (in Queensland Museum, Brisbane, Reg. No. T100919); 1 ♂ (in very poor condition), CAPE YORK, [collector's name not decipherable], -/6/74, G.A. Waterhouse Collection, KL15081 (in Australian Museum, Sydney); 1 ♂, C. York, J.A. Kershaw, LEP-14419, AU 139, Passed through C.W. Wyatt Theft-Coll. 1946-1947 (in Museum of Victoria, Melbourne).

Collection dates for the three examples recorded by Waterhouse and Lyell (1914) are unknown. The Australian Museum specimen was not recorded in that work or in Waterhouse (1932) but appears to have been collected in June 1874. The two specimens in the Queensland Museum have Australian National Insect Collection (ANIC) reference numbers (AN31 000883/884) attached to their labels. The ANIC accession database records the following data entered for these specimens: Location: Cape York (General) 11°30'S, 142°30'E (error > 25 km).

This location data cannot be relied upon, as it was entered as a general location coordinate for Cape York (E.D. Edwards, pers. comm.). The coordinates relate to what is now Heathlands National Park and, most probably, the road junction of Bamaga and Captain Billy's Landing roads, approximately 140 km north of Iron Range. At the time when the specimens were supposed to have been collected on Cape York, access to the peninsula was essentially restricted to sea travel because of the poor quality of the roads and inaccessible terrain. If the specimens were collected in Australia then the most likely location was Somerset near Cape York, where the majority of collectors of the time based themselves (E.D. Edwards, pers. comm.).

It is possible that *A. celestina* is breeding within the Iron Range area. The paucity of records, however, indicates that the species is rare, although more information is required before a quantitative assessment can be made.

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BOOK REVIEW

Birdwing butterflies of the world (new and revised edition), by Bernard D'Abrera. Hill House Publishers, Melbourne, 2003, cost *ca* $650.

This is the second edition of a Monograph of the birdwing butterflies (*Ornithoptera*, *Trogonoptera*, *Troides*), first published in 1975. Since then, D'Abrera has produced a stream of butterfly books that together seek to cover the butterfly fauna of the world. This is an almost impossible task for one man, even with the outstanding collections of The Natural History Museum, London (BMNH) at his fingertips, and his vision and hard work in doing so is to be applauded. The books are renowned for superb colour plates and rather minimalist text that many might regard as wildly eccentric.

Mr D'Abrera is unapologetic about his minimalist approach and, since he writes and finances his own publications, why should he be otherwise. Indeed, the question of text to accompany illustrations is deliberately kept to a minimum, since he believes (p. 303) that 'Readers of my work will by now have got used to the idea that I use as few words as possible, when the pictures I provide are good enough to convey the information needed.' Fair enough, so far as it goes, which is to say as far as description of adults or illustrated early stages is concerned although, in view of the massive literature available on this subject, one might wish for rather more padding sometimes, as will become clear. Eccentricity largely (but not wholly) concerns the question of creationist views, which D'Abrera promotes with some vehemence and, of course, he is entitled to his opinion.

In his most recent books, D'Abrera's personal attacks on colleagues have shown a depressing increase and, before going any further, I should declare that I am on the receiving end of such an attack myself in the book under review (pp 304-6). It is not my intention to challenge this attack, which would be offensive were it not so bizarre, since any interested reader with time on their hands can make their own objective assessment by reference to the literature (Tennent 1997). A personal interest thus declared, I confess to having been in turn both irritated and saddened by the gratuitous rudeness that runs through this book. It is possible to feel some sympathy, for D'Abrera clearly feels it necessary to respond to any criticism or comment with which he disagrees, in a most personal and destructive manner, to the extent where no perceived slight is too small to be vigorously attacked.

The book starts as it means to go on, with criticism of the publishers of the first edition (D'Abrera 1975) and reference to 'the fog of evolutionary pseudo-science' (p. ix) in the first paragraph of a preamble. This section goes on to give grudging acknowledgement to the fact that, since the first edition of his own book, 'there have been several attempts by various authors to monograph the birdwings.' With one exception (Matsuka 2001), D'Abrera thinks little of the work of others, condemning (p. ix) the 'prolix, unlovely, and curiously stilted' work of Haugum and Low (1978-1985), to a degree where the book is almost as much a critique of those authors and their work as it is a celebration of the birdwing butterflies. The work of Ohya (1983) is said to be 'beautifully produced, but taxonomically most peculiar' (p. x), whilst that of von Knötgen (1997) is 'a largely philatelic work of poor scientific or historical value' (p. x). Although Matsuka's superb birdwing book is said to be 'deliciously romantic and gorgeous', it is also said that 'as a serious systematic work ... it is not a success' (p. x). The preamble discusses the scope of the new edition and closes with acknowledgements.

An introductory section contains some historical information concerning the study of birdwing butterflies and quickly moves on to D'Abrera's favourite topics, the promotion of creationist ideals and corresponding vitriolic condemnation (as opposed to balanced dismissal) of any form of evolutionism. Here, the author discards any thought of evolutionary descent ('Evolution is an anti-science' [p. xvi]), but also dismisses 'specious theories of vast geological age' (p. xv), giving the recent Mount St. Helens eruption 'where hundreds of feet of horizontal stratification of soils and rock ... took place within the space of a few hours' as an example proving 'beyond the shadow of a doubt' that 'successive geological "strata" are in no way indicators of geological age' (p. xix). As already stated, anyone is entitled to an opinion, but the space devoted to this pet subject, however eloquently presented, is seriously out of place in a tome of this nature. Description of some 'philosopho-scientific definitions' is equally bizarre.

The main part of the book consists of some stunning habitat photographs and good quality colour plates depicting many of the birdwing butterflies taken from the collections of the BMNH which, although they could reasonably be considered comprehensive many years ago, lack most, if not all, recently described 'birdwing' taxa. This is for good reason; since *ca* 1973 CITES and other restrictions have made unlicensed collection of many birdwing butterflies unlawful. The Museum database shows that few *Ornithoptera* bequests were received between 1975 (the most notable was the collection of Andrew Low in 1985) and 1992, when a bequest from Alan Sharman was registered. No *Ornithoptera* specimens have been registered in the Museum since 1992. A search of The Zoological Record (1978 to mid-2003: available to D'Abrera on-line at the BMNH) listed 133 entries dealing specifically with *Ornithoptera*; 65 dealing with *Troides*, and 22 with *Trogonoptera*. Allowing for some duplication, there have been some 170 papers devoted to these genera published during the period. It is clear just from the titles that this combined literature introduced about 50 new names, ranging from a new subgenus, through many subspecies, to some infrasubspecific forms. Although many (but not all) of the new names are included in the book under review, D'Abrera appears to have made little or no effort to photograph new material for this second edition. For example (p. 121), in addition to nominotypical *O. arfakensis*, two races are accepted: *O. a. occidentalis* Morita & Takenaka, 1998, 'a remarkable race, strongly distinguished in the female' and *O. a. galatea* Sugiyama, 2000, 'a recent wonderful discovery of a small race.' Neither of these races are illustrated and, although both are annotated 'comb. nov.', there is no indication of the original combination. Of course, the reader could look at the original descriptions of these two names, which are accompanied by good quality colour illustrations (Morita and Takenaka 1998, Sugiyama 2000), but in a very expensive book purporting to be a monograph, one might reasonably expect a little more than the four and three lines respectively allocated to females of these taxa (not one word is devoted to the characteristics of either male!). The reader might in any event find some difficulty in finding the second reference, since the original source is not cited. Lack of any illustration of the distinctive *O. paradisea chrysanthemum* Kobayashi & Koiwaya, 1979, might be considered a significant omission.

It must surely have been relatively easy, in these modern days of instant communication and e-mail attachments, to obtain pictures of additional taxa for illustration, but D'Abrera has chosen not to do so; the reviewer contacted a Japanese colleague, author of one new taxon, via e-mail and found that he was not approached.

Another birdwing specialist, in the UK, who has several taxa not represented in the BMNH, told the reviewer that he would have been delighted to lend specimens for inclusion in this book, had he been asked. It can hardly be claimed that exclusion of new taxa or relevant data is due to a lack of available space, since the blank spaces in this book would easily accommodate all taxa not illustrated without any additional printing costs (*e.g.* less than half the available space is utilised on pp 12/3, 74/5, 138/9, 278/9, 298/9; no more than one third of pp 240/1 is used, and text on many other pages is minimal). One might expect the various works on birdwings by Parsons (1992a-b, 1996a-c, 1998 *etc.*) to have been drawn upon, or even the fascinating details of the discovery of the first female and the first male of *O. victoriae* by MacGillivray and Woodford respectively (Tennent 1997, 2002) to have received more than a passing mention. Towards the end of the volume (p. 300) is a list of 12 taxa, described by a number of different authors between 1979 and 1998, which D'Abrera dismisses without a word of explanation. One suspects he has not seen any of them.

It is interesting that D'Abrera now appears to acknowledge a possibility, long accepted as fact by most authors, that '*allottei*' is a natural hybrid between *O. victoriae* and *O. priamus*. He states that his butterfly collection has been sold since the first edition of this book was published (specimens in the first edition noted as being from his collection 'have all long since been disbursed around the world' [p. x]). A male *allottei* illustrated on p. 36 (it has a whole page to itself), which 'awaits deposit in a suitable museum' (p. 32), is therefore something of an enigma. This same specimen was offered to at least two butterfly collectors in France and Australia for sums between £10,000 and £20,000 in 1997; the fact that the BMNH, which has provided D'Abrera with his livelihood for more than a quarter of a century, is not considered a 'suitable' depository for this specimen, seems very strange indeed. Perhaps the fact that it clearly has considerable commercial value is a factor.

One new taxon, *Ornithoptera priamus wituensis*, is described (p. 68) from the Witu islands. The description of *wituensis* hinges on some minor features of colour, size and maculation, the author having apparently forgotten his own portentous claim earlier in the book (p. xv) that 'unlike Jordan and others, I do not rely on spotting or markings in general as a guide to differentiating between the various forms. One of the first requirements in attempting to understand these butterflies is the necessity to really grasp the reality of the immense variability of these maculations among individuals of any given population.' No opinion is offered here as to the validity of *wituensis*, but this does illustrate a certain inconsistency in approach. Comparison might be made with *O. p. miokensis*, which D'Abrera treats (p. 74) as '*O. priamus* f. loc. *miokensis*' and of which he declares 'Let me be quite clear, *miokensis* is a natural hybrid between eastward-flying *bornemanni* and westward-flying *urvillianus*, both meeting naturally on Mioko, and there's an end of it.' No science here then!

D'Abrera illustrates three males (one underside) of *wituensis*, including the holotype (but see below), which 'illustrate the variability of range [presumably the range of variation] to be observed amongst the ten males in the [BMNH].' One wonders why, in view of the stated wide range of variation, D'Abrera chose not to illustrate the full range, since there is room on the two pages concerned on which to place several further specimens life sized; in fact, it would have been possible to include almost the whole series of both sexes life sized if they had been 'halved'! He can have no aversion to including so many specimens of the same taxon, for he illustrates, over 11 pages, 14 males of *O. p. urvillianus*, many of which appear almost identical, including

two specimens photographed in life, one of which is, with the exception of the tip of one antenna, wholly out of focus.

Examination of type material (10 ♂♂, 10 ♀♀) of *wituensis* in the BMNH identified some extremely sloppy work. One male specimen bears a label written in red biro, marked '*wituensis* (BD'A) m/s holotype', and is identified in the BMNH database (specimen # 134356) as the holotype. No other specimen carries an individual label: a similar hand-written drawer label, marked '*wituensis* BD'A 1994 m/s', is placed below the remainder of the series. Unfortunately, the specimen apparently labelled by D'Abrera some 10 years ago as the holotype, is not the specimen identified as the holotype (BMNH database # 134355, lacking one antenna since it was photographed) in his book. Whilst we all have occasional lapses, D'Abrera obviously considers placing type labels on taxa he has described as unnecessary. Not for the first time (*cf* Tennent 2001, 2004), the reviewer has now placed suitable individual labels on the specimens in order to avoid future confusion. For the record, D'Abrera correctly gives data from the holotype as 'Witu (French I.), June-August, 1925, coll. A. F. Eichhorn', and lists (p. 68) 9 male and 10 female paratypes 'all with data as above'. This is not true: 7 males (including the holotype) and 6 females, bear typed labels with the data 'Witu = French Is. June-August 25 (A. F. Eichhorn)'; 2 males and 3 females are labelled 'Witu = French Is. June 1925 (A. F. Eichhorn)'; 1 female has a hand-written label marked only 'French Insel', and the remaining male bears an indecipherable hand-written label which reads something like 'Teena Sol'.

Deslisle (2001) raised a new subgenus (*Zeunera*) for *Ornithoptera alexandrae*; again no opinion is offered here as to the validity of that action, but one might expect to see a passing mention, if not a detailed discussion, in a monograph of the group published two years later. On p. x, D'Abrera states 'the work by Sumiyoshi (1989) ... is limited by its narrow treatment of the *Ornithoptera* only, ignoring the other two genera that make up the birdwings. Perhaps the author is planning to treat these genera in due course.' Aside from the faintly ludicrous suggestion that Sumiyoshi's work was incomplete because he chose not to incorporate additional genera (the term birdwings has no taxonomic relevance) in his *Ornithoptera* work, something akin to criticising Carpenter (1953) for not including the 'other genera' that make up the 'milkweeds' in his treatment of *Euploea*, the late Mr Sumiyoshi did in fact deal with *Troides* and *Trogonoptera*, published in the year before his death 10 years ago (Sumiyoshi 1994). These few examples illustrate a remarkable lack of research in the production of this volume; whether due to arrogance or incompetence (or a combination of both) is not entirely clear.

The book is an extraordinary exercise in self-indulgence, often blinkered and largely pompous. For example, D'Abrera's opinion of his own book on butterflies of the Australian Region (D'Abrera 1971), which he believes (p. 230) was 'arguably the most luxuriously and comprehensively produced regional work on butterflies following the 2nd World War', was a view not shared by a respected Australian reviewer who found that 'the text and several plate captions regrettably contain numerous errors and misprints ... introduction abounds in inexcusable inaccuracies and half truths ... the glossary wrongly or misleadingly defines a number of terms ... within the main text there are many more errors and omissions, some of which are due to the failure of the author to study the butterfly literature' (Moulds 1972). More than 30 years later, similar errors, omissions and bizarre comments abound in the book under review.

Unwittingly, the curious (and sadly often rather ridiculous) tone of this book probably does the evolutionist cause considerable favour (not that it needs help). However, the book goes a long way beyond eccentricity and, whilst it might be customary to ignore D'Abrera's rambling and highly offensive outbursts, he must expect to be challenged occasionally. Eccentricity is a wonderful thing, but it is no longer amusing when it becomes venomous and destructive; he should also understand that whilst dead victims are easy prey, live ones might occasionally find the time and have the inclination to bite back. His attacks on the late Jan Haugum and the late Ray Straatman are unworthy and cowardly; in particular, Jan Haugum was a generous man with a very well developed sense of humour. His work was well researched and his recent passing is a loss to entomology. One wonders how history will view D'Abrera.

Perfection is an elusive goal and it is just not possible to write a book without making mistakes, which is why the review process, which hopefully reduces mistakes to a minimum, is so important. Of course anyone who writes, publishes and markets their own books is entitled to write whatever they want, but it might be considered to be to any author's advantage to arrange some external review, a process which not only reduces errors but (in this case) might provide a steadying or cautionary influence on some of the more offensive criticisms of others. In the opinion of the reviewer, the poor standard of this work would be unlikely to attract the interest of any serious publisher. D'Abrera gives his address (p. xi) as c/o the BMNH, London, although he has actually never had any formal connection with the Entomology Department of the Museum beyond that of a long-term visitor. One wonders whether, in a climate in which science is increasingly fighting a rearguard action against fundamentalist philosophies, that institution should be concerned at being associated, however informally, with contentious religious issues presented in such an intolerant manner or, for that matter, with such gratuitous rudeness. That this book is a work of art is undisputed; but claim for its acceptance as a work of science is dubious. If D'Abrera had been moved to put the same effort into researching butterflies as he has expended on subjective, mean-spirited and rude criticisms of people with whose views he finds fault, this superficial work would have been immeasurably enhanced. The long gestation period leading to publication of a book allows ample opportunity for modification and fine-tuning; D'Abrera presumably therefore actively seeks to offend.

This second edition adds little or nothing of interest to our knowledge of these splendid butterflies. In the opinion of the reviewer, the book has no place on the shelf of any serious lepidopterist, professional or amateur. Its very high price makes it impractical as a coffee table attraction and it is difficult to see any use for it beyond mere curiosity. D'Abrera clearly loves the butterflies he has chosen to deal with and there is no doubt he has made a unique contribution to entomology over the years, stimulating much interest and research. Conservation issues raised in this (and other) books by the same author will rightly find favour in all quarters; indeed adoption of these principles would undoubtedly make the world in general a better place. It is equally true, in the opinion of the reviewer, that the entomological world would be a *nicer* place without the pompous poison that flows so freely from the D'Abrera pen.

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John Tennent
Dereham, UK

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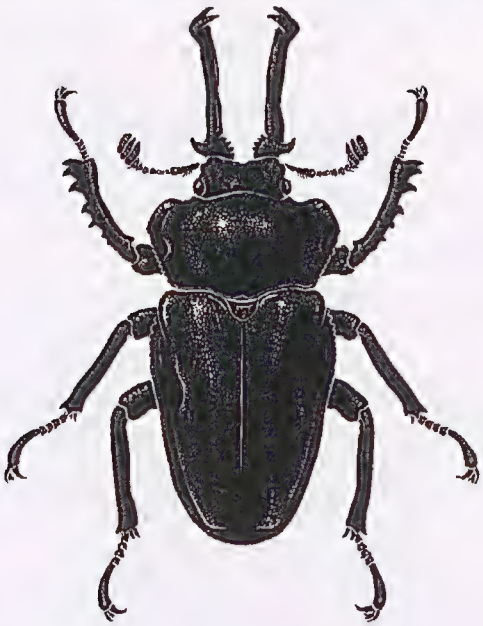

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Items for insertion should be sent to the editor who reserves the right to alter, reject or charge for notices.

NOTES FOR AUTHORS

Manuscripts submitted for publication should, preferably, be type-written, double spaced and in triplicate. Refer to recent issues for layout and style.
All papers will be forwarded to two referees and the editor reserves the right to reject any paper considered unsuitable.

It is Magazine editorial policy that usage of taxonomic nomenclature will comply with the mandatory provisions of the International Code of Zoological Nomenclature.

Papers longer than ten printed pages will normally not be accepted.

Papers will be accepted only if a minimum of 100 reprints is purchased. Manuscripts occupying less than one printed page may be accepted without charge if no reprints are required. Charges are as follows: cost per printed page $27.50 (B&W), $60 (colour) for 100 copies. Page charges may be reduced at the discretion of the Publications Committee.

Illustrations. Both colour and B&W photographs must be submitted at the size they are to appear in the journal. Line drawings should be about twice their required size.

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